

# **Social Security Staff Study**

Office of Senate Majority Leader William H. Frist, M.D.

The first social security recipient, Ida May Fuller, paid social security payroll taxes of \$44. She collected benefits that totaled \$20,934. Initial enrollees in the social security program received benefits that were significantly higher than benefits they could have financed through other means available to them. Today, however, no such windfalls can be expected for future retirees and indeed, depending on the type of changes that might be considered to insure future program solvency, rates of return might even be negative.

This memorandum presents a staff comparison between the rates of return for the Old-Age, Survivors and Disability Insurance (OASDI) program and rates of return in the federal government's Thrift Savings Plan.

## *1. Social Security Internal Real Rates of Return.*

In business the internal rate of return (IRR) is a discount rate at which the present value of future cash flows of an investment equal the cost of the investment. When the IRR is greater than the required return – the hurdle rate – the investment is acceptable.<sup>1</sup> Applied to the social security program the IRR is the interest rate for which the present value of expected payroll taxes is equal to the present value of expected benefits. Internal rates of return estimates, therefore, attempt to estimate what real annual rate of return would be required for workers today to fund their future benefits.

Estimates of internal rates of return are difficult to calculate and are dependent on multiple factors including but not limited to: (1) age of entrance into the workforce, (2) lifetime earnings, (3) earnings pattern, steady, part-time, etc., (4) sex, (5) health and disability, (6) family composition: single, married, children, (7) age of retirement, and (8) life span after retirement. The rate of return is also influenced by legislated changes in the program and assumptions about future payroll tax increases or benefit reductions necessary to maintain program solvency.

Economists have studied and estimated the IRR for social security over the past many years. In general the results of these studies point to a consistent finding – future retirees will see decreasing IRRs compared to previous generations of retirees. Estimates are made by birth cohorts and by whether the worker is a single male, single female, one-earner couple or two earner couple. Estimates presented here assume a steady lifetime earning pattern, and increased payroll taxes in the future for maintaining promised scheduled benefits.

Persons born in 1920, that turned 65 in 1985 and are in their mid-80's today, consistently are estimated to have high real IRR (adjusted for inflation). For low wage workers the real IRR

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<sup>1</sup>*Dictionary of Finance and Investment Terms*, Sixth Edition; John Downes and Jordan Elliot Goodman; 2003.

is estimated to between 4.3% and 7.2%.<sup>2</sup>; for average wage workers between 2.4% and 5.5%; and for high earners between 2.26% and 5.4%. While cohorts born in 1985, who will reach retirement in 2050, will experience **50% to 60% lower real IRR's**. Simulation of alternative categories of workers in this age cohort will have rates ranging from a low of 2.5% to 4.7% for low earners; 1.5% to 3.8% for average earners; and 0.8% to 3.1% for high earners.

The SSA assumes for those born after 2000, and a weighted average of the distribution of beneficiaries relative to future earnings history, will have an average real IRR of 1.7 %. Inflation is assumed to average 2.8% annually through 2050, based on the OASDI Trustees 2004 intermediate economic assumptions. Average annual IRR then for this 2000 age cohort is therefore estimated to be 4.5 %.<sup>3</sup>

## 2. *Thrift Savings Plan Annual Returns.*

The Thrift Savings Plan (TSP) was established in 1987 as a voluntary retirement savings plan offered to federal employees, including members of Congress. The TSP – a low risk, low-cost retirement savings plan – functions like a 401(k) for federal employees including members of the military service.

Today 3.4 million federal employees participate in the TSP and their investments have grown to over \$152 billion. Voluntary participants in this program today have a choice of five broad-based investment funds. However, in the beginning participants had 3 investment funds to choose from, the fourth (a small-cap fund) and a fifth (an international stock fund) were added later. Later in 2005 an additional life cycle portfolio will be offered that will reallocate investments in the participant's accounts as the approach retirement. Finally, an independent Federal Retirement Thrift Investment Board administers the TSP.

The five funds a participant can select from consist of the following:

1. Government Securities Fund (G-Fund) investing in U.S. Treasury securities.
2. Investment Grade Bonds (F-Fund) an indexed fund of investment grade bonds.
3. Common Stock Index Fund (C-Fund), large cap.
4. Small and Mid-Cap Stock Index Fund (S-Fund).
5. International Stock Index Fund (I-Fund).

Based on data through 2004, the annual rates of return over the last 16 years for the three funds that have been available since the program's inception follow:

G Fund	6.73 %
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<sup>2</sup>Orlo R. Nichols, Michael D. Clingman, and Milton P. Glanz. *Internal Real Rate of Return under the OASDI Program for Hypothetical Workers*. Social Security Administration, Office of the Chief Actuary. Actuarial Note Number 144, June 2001.

<sup>3</sup>Formula for converting from real to nominal is  $[(1+1.7\%) \times (1+2.8\%)-1] = 4.5\%$

F Fund	7.96 %
C Fund	12.32 %

For the last 10 years the five funds annual rates of return follow:

G Fund	5.75 %
F Fund	7.72 %
C Fund	11.99 %
S Fund	11.84 %
I Fund	5.45 %

It should be noted that during the period of TSP's existence the economy has experienced two recessions (July 1990 – March 1991 and March 2001 – November 2001), a stock market collapse, and an attack on United States' soil. Despite these shocks to the economy, rates of return in TSP over the period remained above other market averages for the same time period.

### 3. *Comparison of OASDI IRR and TSP ARR.*

While differences may exist in benefits provided through the OASDI program that might not be provided in the TSP, such as cost-of-living adjustments for life and disability benefits, nevertheless, simple comparisons of the IRR in the OASDI program and the annual rate of return in the TSP program can provide a proxy for exploring the relative benefits provided across generations for various types of workers.

On average, assuming a federal worker invested equal shares of their savings in the three funds (G, F, and C) from the TSP inception, then the average annual rate of return would have been approximately 9.4%. While past performance of any investment is no guarantee of future performance, it is possible to use this estimate for comparing returns from alternative investments and compare to the IRR for the OASDI program.

On average, assuming an individual born approximately at the time the TSP program came into existence (1985), had steady but average earnings over their work life and retired in 2050, the real IRR is estimated to be 1.48% for a male and 1.90% for a female. On average then, the real IRR would be 1.69% over the worker's lifetime. Assuming annual inflation of 2.8% , the inflation adjusted IRR would be 4.5%.

Simple comparisons can be proffered to illustrate this dramatic difference in returns. A one time investment of \$10,000, over 10 years, would have grown based on the real IRR estimate of 1.7 % to \$11,720 or \$13,095 over 16 years. Adjusted for inflation, the \$10,000 investment would have grown to \$15,530 over 10 years or \$20,223 over 16 years. An individual that invested \$10,000 equally weighted in the TSP G, F, and C Funds in 1988, and nothing thereafter, would accumulate to \$24,556 over 10 years, and \$42,100 by the end of 16 years. **The TSP rates of return would more than double the investment of an individual compared to**

**that which would be comparable in the OASDI program.**